Uncovering Treatment Options for Patients with Non-Small Cell Lung Cancer (NSCLC)

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) Recommend Molecular Testing for Appropriate Patients with Metastatic NSCLC, if Clinically Feasible¹*†

FOR ADENOCARCINOMA, LARGE CELL, AND NSCLC NOT OTHERWISE SPECIFIED (NOS)

1. Recommend biomarker testing for EGFR, ALK, ROSI, BRAF, MET, exon 14 skipping, RET, NTRK, and PD-L1¹, and emerging biomarkers MET amplification, ERBB2 (HER2) and TMB.

2. Strongly advise broader molecular profiling with the goal of identifying rare driver mutations for which effective drugs may already be available, or to appropriately counsel patients regarding the availability of clinical trials.¹

3. The use of plasma cell-free/circulating tumor DNA (plasma testing) can be considered in specific clinical circumstances such as a patient unfit for invasive tissue sampling or if there is insufficient material for molecular analysis following pathologic confirmation of a NSCLC diagnosis.¹

The Value of Comprehensive Genomic Profiling with Foundation Medicine

Single gene testing or limited panels have been shown to miss up to 35% of ALK fusions² and 21% of EGFR mutations (41% of these missed EGFR mutations are common alterations targetable by an FDA-approved therapy in the applicable patient’s tumor type)³.

Foundation Medicine is the only company that has demonstrated the ability for a comprehensive blood-based test to identify patients with ALK fusions in a global prospective trial for metastatic NSCLC at similar frequencies historically published with tissue testing⁴, as shown with our previous laboratory developed test FoundationOne®LiquidΔ.

A study in NSCLC found that 44% of patients didn’t get results from molecular testing because tissue was insufficient⁵. In such cases, a portfolio that includes liquid-based comprehensive genomic profiling provides the option to automatically reflex to liquid.

Expanding FDA-Approved Therapy Options for Metastatic NSCLC patients

- **EGFR**
  - Gilotrif® (afatinib)
  - Iressa® (gefitinib)
  - Tarceva® (erlotinib)
  - Vizimpro® (dacomitinib)

- **ALK**
  - Alecensa® (alectinib)
  - Alunbrig® (brigatinib)
  - Xalkori® (crizotinib)
  - Zykadia® (ceritinib)

- **ROS1**
  - Rozlytrek® (entrectinib)
  - Xalkori® (crizotinib)
  - Zykadia® (ceritinib)

- **BRAF**
  - Tafinlar® (dabrafenib) in combination with Mekinist® (trametinib)
  - Zelboraf® (vemurafenib)

- **MET**
  - Tabrecta® (capmatinib)

- **RET**
  - Retevmo™ (selpercatinib)

- **NTRK**
  - Rozlytrek® (entrectinib)
  - Vitakvi® (larotrectinib)

- **PD-L1**
  - Keytruda® (pembrolizumab)
  - Tecentriq® (atezolizumab)

- **TMB**
  - Keytruda® (pembrolizumab) in combination with chemotherapy

¹ The NCCN Guidelines¹ for NSCLC provide recommendations for individual biomarkers that should be tested and recommend testing techniques but do not endorse any specific commercially available biomarker assays.

† National Comprehensive Cancer Network® (NCCN®).
FDA-approved portfolio of tests to help identify more treatment options:

### Tissue Biopsy

**FoundationOne CDx** is FDA-approved and covered by Medicare for qualifying patients.

- Analyzes 324 genes
- Reports TMB and Microsatellite Instability (MSI)

**Total:** 10 SLIDES or 1 FFPE BLOCK

Typical turnaround time is <2 weeks from receipt of specimen

**IHC Testing for PD-L1**

Optional add-on with 4 additional slides

Typical turnaround is 5 days from receipt of specimen

### Liquid Biopsy

**FoundationOne Liquid CDx** is FDA-approved and covered by Medicare for qualifying patients.

- Analyzes 324 genes
- bTMB, MSI-High, and tumor fraction

**Total:** TWO 8.5mL TUBES of PERIPHERAL WHOLE BLOOD

Typical turnaround time is <2 weeks from receipt of specimen

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References:


4. LBA81_PR 'Phase II/III blood first assay screening trial (BFAST) in patients (pts) with treatment-naïve NSCLC: initial results from ALK+ cohort' will be presented by Shirish Gadgeel during the proffered paper session on Monday, 30 September 2019, 08:30-10:00 CEST in Madrid Auditorium (Hall 2). Annals of Oncology, Volume 30, Supplement 5, October 2019.


6. The Centers for Medicare & Medicaid Services (CMS) Decision Memo for Next Generation Sequencing (NGS) for Medicare Beneficiaries with Advanced Cancer (CAG-00450R) see Appendix B.